

buildings and some of the instruments, but also the natural history of the Observatory site. For example, I did not realise that

The site is to some extent isolated from its urban surroundings by the two rivers, the Liesbeek and the Black. To the north and east are wetlands that form a sanctuary for bird life. Near its northern boundary is a bird hide that overlooks the vlei area. In winter, flamingos, geese, ducks and many other birds can be seen.

Meanwhile, the Observatory grounds still include areas of original vegetation, which boast an endangered plant and the equally-endangered Western Leopard Toad.

*The Royal Observatory at the Cape of Good Hope. History and Heritage* was a pleasure to read, and brought back nostalgic memories of my one and only visit there. Ian Glass writes well, and his book is a pictorial *tour de force*, with its many historical and recent photographs, cartoons, sketches, architectural plans and Observatory site maps. It is an excellent 'guide book' for those visiting the Observatory, but also deserves to grace the bookshelves of anyone with an interest in South African astronomical history. Note that the final price of copies will be determined by the cost of airmail postage to the purchaser. For enquiries and/or orders email the author ([ian.glass@gmail.com](mailto:ian.glass@gmail.com)) or Ms Thembela Matungwa ([tm@sao.ac.za](mailto:tm@sao.ac.za)).

### Reference

- Glass, I.S., 2013. *Nicolas-Louis de la Caille Astronomer and Geodesist*. Oxford, Oxford University Press.
- Warner, B., 1979. *Astronomers at the Royal Observatory, Cape of Good Hope: A History with Emphasis on the Nineteenth Century*. Cape Town, Balkema.
- Warner, B., 1983. *Charles Piazzi Smyth: Astronomer-artist: His Cape Years, 1835–1845*. Cape Town, Balkema.
- Warner, B., 1995. *Royal Observatory, Cape of Good Hope, 1820–1831*. Dordrecht, Springer.

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***Perspectives on Early Astronomy in Indian Context*, by M.N. Vahia, Nisha Yadav and Srikumar Menon. (Kolkata, National Council of Science Museums, 2015), pp. [iv] + 112. Paper back, 140 × 218 mm.**

For some time I have been following the research, mainly in ethnoastronomy and archaeoastronomy, of Professor Mayank Vahia from the Tata Institute of Fundamental Research in Mumbai, so it is a great pleasure to be able to review this little book, which he wrote

with two of his colleagues.

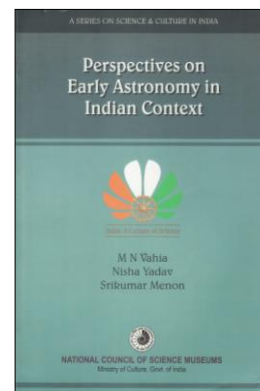
In the "Author's Note" Professor Vahia, Nisha Yadav and Srikumar Menon explain that in this book they try

... to summarise our perspective on how human interest in skies might have evolved.

This book aims to provide a phenomenological overview of the growth of our understanding of astronomy. It does not provide technical details of how to measure locations of stars and planets or details of astronomical records in Sanskrit literature, something that has been done much better by other more competent authors. (page 3).

Following this are six chapters.

The first is titled "Evolution of Human Understanding of Astronomy". After briefly reviewing human evolution, prehistoric cultural phases and environmental change during the Pleistocene and Holocene, the authors try to answer the following question: "So how did humans gather and evolve their ideas of astronomy from the first stages of their evolution and understanding?" (page 8). In so doing, the authors look at the Sun, Earth, Moon and stars, and the seasons. While much of this is basic fare for astronomers, novices will find it useful.



The next chapter, "Astronomy in the Context of Human Intellectual Growth", largely provides a background

context for the more detailed analysis of Indian astronomical history, which will follow. The authors point out that "Attempts made by humans in trying to understand the heavens are of profound interest and importance." (page 24), and they proceed to discuss the following topics: myths, the splendour of the night sky, early monumental architecture, religious ideas, and expression through art. In the process, they briefly introduce some Indian examples.

However, it is only Chapter 3, "Indian Megaliths and Astronomy", that fully immerses us in Indian astronomy. The authors stress that

Most of the megaliths in India are found in the southern part or [*sic*] peninsula India, though there are other pockets of megalithic sites found at Vidarbha, Kumaon, Rajathan, Jharkand etc. (pages 35–36).

Specific megalithic sites we are introduced to are at Aaraga Gate, Byse, Hanamsagar, Hergal, Mumbaru, Nilaskal and Vibhutihalli, all in southern India, plus the stone circles near Nagpur in central India. Most of these meg-

alithic sites appear to have astronomical associations. Chronologically, Indian megalithic sites date between 2,500 BCE and CE 300.

After this archaeoastronomical focus the book moves forward in time and examines aspects of Indian ethnoastronomy. This occurs in Chapter 4, “Astronomical Myths of India”, which begins with an analysis of the Banjaras, the Gonds and the Kolams from central India. These are among the oldest tribes of India, and were studied by Mayank Vahia and his anthropological associates. Particularly interesting are Tables 4.2 and 4.3, which compare the astronomical and meteorological perspectives of the three tribes and show that

Most of the [astronomical] observations of the sky relates [*sic*] to the sky seen in the period close to the monsoonal season—from March till July. They seem to assume that the sky is the same at other periods or do not bother to look at the sky. This indifference to the sky is also interesting in the sense that even though visually striking, these societies do not seem to be impressed by it as a matter of curiosity. (page 58).

As the authors point out, this contrasts markedly with the situation in prehistoric southern India, where the megalithic sites reveal that there was a profound interest in astronomy. Vahia, Yadav and Menon then shift their attention to the Hindu and Jain religions, and spend the next 15 pages of this chapter recounting ‘Astronomical Stories’ (and verses) relating to astronomy, time and the origin of life.

The penultimate chapter in this little book is titled “Astronomy and Civilisation”, and begins by identifying four different evolutionary phases in astronomy:

- (1) The Initial Phase
- (2) The Settlement Phase
- (3) The Civilisation Phase
- (4) The Technology Based Phase

Vahia, Yadav and Menon then devote the next 28 pages to explaining these, using India as their case study. In the process they spread their net widely to illustrate their scheme, snaring examples drawn from rock art, megalithic sites (with some inevitable repetition from Chapter 3), Vedic astronomy, the Harappan civilisation, ‘Modern Astronomy’, and so on. They emphasize that a great deal has already been published relating to Phases 2 and 4. Re the former, the *Vedanga Jyotisa*, an astronomical appendix of the *Rig Veda*, is particularly apposite. Although this interesting four-phase paradigm for astronomical evolution is developed here specifically for Indian astronomy, it has international applications and should be tested in other geographical regions.

Rounding out this book is a 2-page “Con-

clusion”, with the following comment and challenge:

We are sure that we have only touched rather limited perspectives of astronomy in this little book but we hope that it will instigate our readers to think of other perspectives and enjoy the journey and exploring those ideas. We have deliberately explored less-travelled avenues of thought in the hope that some of the readers may carry these ideas forward and confirm or negate them. (page 104).

After this are 8 pages of references.

All in all this is an interesting book, and the repeated reference (both here, and in the book itself) to it as a “little book” is slightly misleading. Admittedly, the cover is of modest dimensions, and the book spans a mere 116 pages, but most of these pages are jam-packed with text (rather than diagrams)—in small print—so the amount of reading and the information imparted, is by no means ‘little’. Thus, the book contains many thought-provoking ideas and passages. Admittedly, I had encountered some of these previously, for much of the book’s contents has appeared in earlier publications (including in this journal), but there is merit in bringing this scattered material together under one cover.

The National Council of Science Museums (of India) is to be congratulated on agreeing to publish this book. It is a free publication and so is excellent value, especially for those with an interest in Indian ethnoastronomy and/or archaeoastronomy. Copies can be ordered from: National Council of Science Museums, 33, Block - GN, Sector - V, Bidhan Nagar, Kolkata 700 091, West Bengal, India.

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***Catchers of the Light. The Forgotten Lives of the Men and Women Who First Photographed the Heavens*, by Stefan Hughes. Two Volumes (Paphos (Cyprus), ArtDeCiel Publishing, 2013), pp. [xviii] + 735, and [vi] + 736–1612 + [i]. ISBN 978-1-4675-7992-6 (hard copy), 215 × 302 mm, US\$199 (e-book \$39.99).**

The emergence of astrophysics during the nineteenth century is one of the great achievements of international astronomy, as spectroscopy and photography collectively revolutionised our discipline.

John Hearnshaw produced the classic tome on the history of astronomical spectroscopy long ago, and a second edition recently appeared (Hearnshaw, 2014), but until Stefan Hughes published *Catchers of the Light ...*, no detailed